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Multiscale Modeling of Materials and Processes

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Deadline for manuscript submissions:
closed (15 August 2020)

Message from the Guest Editors

This Special Issue solicits articles demonstrating recent advancements in computational models for predicting formation and evolution of nano/microstructures in different manufacturing processes, also their effect on properties and performance of metals and alloys. In several material processing methods, such as casting, welding, and laser additive manufacturing, different nano/microstructures are created by means of solidification or solid state phase transformation, and they also determine the overall properties of the products. This Special Issue solicits articles in the following areas:

1. Computational modeling at different length scales of solid-liquid interfaces and solidification structures (e.g., dendritic structures).
2. Computational modeling at different length scales of solid-solid interfaces and solid state phase transformations.
3. Process simulations and predicting structure-property-processing relations.
4. Computational modeling studies of defect formation and their effects on mechanical and physical properties of materials.
5. Experimental studies that effectively verify and validate computational models.

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Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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